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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/629,497	07/28/2003	Scot Philip Sandoval	97112.3300	6734

20322 7590 11/21/2005

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EXAMINER

WILKINS III, HARRY D

ART UNIT	PAPER NUMBER
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1742

DATE MAILED: 11/21/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/629,497	Applicant(s) SANDOVAL ET AL.	
	Examiner Harry D. Wilkins, III	Art Unit 1742	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 October 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-25 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 28 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>10/11/05</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. Applicant's election without traverse of group I in the reply filed on 19 October 2005 is acknowledged.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 1-25 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Applicant describes the cell as an "electrochemical" cell. However, the cell is more accurately an "electrolytic" cell. An electrochemical cell uses chemical changes in the reactants to produce energy. An electrolytic uses energy to produce chemical changes in the reactants. Since the electrowinning reaction consumes energy to produce chemical changes, it is an electrolytic cell.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1-5, 8-14, 18 and 22 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Young et al (US 5,622,615).

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Young et al anticipate the invention as claimed. Young et al teach (see figure 1 and example 7) a method of electrowinning copper including providing an electrolytic cell (4) containing at least one anode and at least one cathode, wherein the cathode has an "active" surface area, providing a flow of electrolyte through the electrolytic cell, the electrolyte including copper and solubilized ferrous iron, oxidizing at least a portion of the ferrous ions to ferric ions at the anode, removing (plating) at least a portion of the copper at the cathode and operating the cell at a voltage below 1.5 V and a current density greater than 26 A/ft^2 ($\sim 280 \text{ A/m}^2$).

Regarding claims 2-3 and 22, the disclosed range of current density included $500\text{-}2000 \text{ A/m}^2$ ($45.45\text{-}185.81 \text{ A/ft}^2$).

Regarding claims 4-5, the disclosed voltage can be as low as 1.03 Volts (which is less than about 1.0 Volts).

Regarding claims 8-9, Young et al teach (see col. 9, lines 28-39) using electrocatalyst coated titanium as the anode.

Regarding claims 10-11, the electrolyte contained 35 g/L Fe.

Regarding claims 12-14, the disclosed temperature of Young et al is 80°C (176°F). The range of temperatures disclosed by Young et al included 60°C (140°F)

Regarding claim 18, Young et al teach (see example 7) the process of electrowinning copper wherein a flow through anode and circulation is used so that operation of the cell occurs at a voltage less than 1.5 Volts and at a current density of more than 26 A/ft^2 .

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 6, 7 and 19-21 rejected under 35 U.S.C. 103(a) as being unpatentable over Young et al (US 5,622,615).

Regarding claims 6, 7 and 19, Young et al teach varying the flowrate of the electrolyte (see example 6) and describes it as a result effective variable. Therefore, it would have been obvious to one of ordinary skill in the art to have optimized the flow rate of the electrolyte in the electrolytic cell.

Regarding claim 20, it would have been obvious to one of ordinary skill in the art to have facilitated the electrolyte circulation by using a flow manifold because a flow manifold would have allowed easy distribution of the electrolyte to multiple cells simultaneously, thereby increasing productivity.

Regarding claim 21, it would have been obvious to one of ordinary skill in the art to have provided the flow of electrolyte into and through the flow through anode in order to allow the electrolyte to react with the anode to oxidize the ferrous ions to ferric ions before the electrolyte reached the cathode.

8. Claims 15-17 and 23-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Young et al (US 5,622,615) in view of Sandoval et al (US 5,492,608).

The teachings of Young et al are described above.

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However, Young et al do not teach a recycling of electrolyte wherein at least a portion of the ferric ions are reduced back to ferrous ions to form a regenerated electrolyte.

Sandoval et al teach (see col. 7, lines 27-37) recycling a copper electrowinning electrolyte through activated carbon modules and exposing the electrolyte to sulfur dioxide gas to reduce the ferric ions back to ferrous ions to form a regenerated electrolyte which is fed back to the cell.

Therefore, it would have been obvious to one of ordinary skill in the art to have incorporated the recycle line taught by Sandoval et al in the method of Young et al in order to effectively recycle the electrolyte to reduce waste. The activated carbon acts as a catalyst in the process.


Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Harry D. Wilkins, III whose telephone number is 571-272-1251. The examiner can normally be reached on M-F 8:30am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy V. King can be reached on 571-272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Harry D Wilkins, III
Examiner
Art Unit 1742

hdw